Claims

1. A mutant human α-synuclein having decreased aggregation forming ability.

2. A mutant human α-synuclein having the amino acid sequence comprising at least one of the following amino acid substitution in the amino acid sequence set forth in SEQ ID NO: 1: Gly68; Ala69; Val70; Val71; Thr72; Val74; Val77; and Val82.

3. A mutant human α-synuclein having the amino acid sequence which comprises at least one of the following amino acid substitutions in the amino acid sequence set forth in SEQ ID NO: 1:

substitution of Gly68 with threonine or valine;

substitution of Ala69 with threonine, valine or lysine

substitution of Val70 with threonine, proline or phenylalanine;

substitution of Val71 with threonine or lysine;

substitution of Thr72 with valine or glutamic acid;

substitution of Val74 with threonine;

substitution of Val77 with threonine; and

substitution of Val82 with lysine.

4. A mutant human α-synuclein comprising the amino acid substitutions Ala69Lys / Val70Thr / Val71Lys / Thr72Glu in the amino acid sequence set forth in SEQ ID NO: 1.

5. A mutant human α-synuclein comprising the amino acid substitutions Ala69Lys / Val70Thr / Val71Lys / Thr72Glu and Val82Lys in the amino acid sequence set forth in SEQ ID NO: 1.

6. A gene coding for the mutant human α-synuclein claimed in any one of claims 1 to 5.

7. A recombinant plasmid comprising the gene claimed in claim 6 introduced therein.

8. A transformant transformed with the recombinant plasmid claimed in claim 7.

9. A process for producing a mutant human α-synuclein comprising the steps of:

(a) introducing the gene claimed in claim 6 into a plasmid to prepare a recombinant plasmid;

(b) transforming a host with the recombinant plasmid of (a) to prepare a transformant; and

(c) culturing the transformant of (b) to produce the mutant human α-synuclein.

10. A composition for inhibiting aggregation of the wild type human α-synuclein, Ala53Thr mutant human α-synuclein or Ala50Pro mutant human α-synuclein, comprising the mutant human α-synuclein claimed in any one of claims 1 to 5.

11. A method for inhibiting aggregation of the wild type human α-synuclein, Ala53Thr mutant human α-synuclein or Ala50Pro mutant human α-synuclein in a cell, tissue or organism,

comprising contacting the cell, tissue or organism with the mutant human α-synuclein claimed in any one of claims 1 to 5.

12. A peptide having a sequence of 10 or more contiguous amino acid residues in the following amino acid sequence:

Gln-Val-Thr-Asn-Val-Gly-Gly-Ala-Thr-Thr-Thr-Gly-Val-Thr-Ala-Val-Ala-Gln.

13. A peptide having the following amino acid sequence:

Val-Gly-Gly-Ala-Thr-Thr-Thr-Gly-Val-Thr.

14. A composition for inhibiting aggregation of the wild type human α-synuclein, Ala53Thr mutant human α-synuclein or Ala50Pro mutant human α-synuclein, comprising the peptide claimed in claim 12 or 13.

15. A method for inhibiting aggregation of the wild type human α-synuclein, Ala53Thr mutant human α-synuclein or Ala50Pro mutant human α-synuclein in a cell, tissue or organism, comprising contacting the cell, tissue or organism with the peptide claimed in claim 12 or 13.